Objectives

1. Define key terms introduced in this chapter.
2. Explain the special considerations in dealing with the caregiver of a sick or injured child (slides 16-17).
3. Describe the major developmental characteristics and modifications of patient assessment and management techniques recommend for patients in each of the following age groups (slides 19-32):
   a. Neonates
   b. Infants
   c. Toddlers
   d. Preschoolers
   e. School-age children
   f. Adolescents

Objectives

4. Describe the major anatomical and physiological differences in children with regard to the following (slides 33-42):
   a. Airway
   b. Head
   c. Chest and lungs
   d. Respiratory system
   e. Cardiovascular system
   f. Abdomen
   g. Extremities
   h. Metabolic rate
   i. Skin and body surface area
Objectives

5. Discuss the normal vital signs for children in various age groups.
6. Use the Pediatric Assessment Triangle (PAT) to determine a pediatric patient’s status (slides 46-67).
7. Discuss special considerations for the following elements of the pediatric secondary assessment (slides 60-67):
   a. Physical exam
   b. Vital sign assessment
   c. History taking
8. Recognize signs of respiratory distress, respiratory failure, and respiratory arrest in pediatric patients (slides 70-78).

Objectives

9. Discuss the guidelines for emergency care of the following (slides 80-90):
   a. Respiratory emergencies
   b. Foreign body airway obstruction
10. Describe the presentation and emergency medical care for pediatric patients with the following conditions (slides 91-108):
    a. Croup
    b. Epiglottitis
    c. Asthma
    d. Bronchiolitis
    e. Pneumonia
    f. Congenital heart disease

Objectives

10. Describe the presentation and emergency medical care for pediatric patients with the following conditions (slides 91-108):
    a. Shock
    b. Cardiac arrest
11. Explain the assessment steps and emergency care protocol for a respiratory or cardiopulmonary emergency in the pediatric patient (slides 83-84, 107-108).
Objectives

12. Describe the presentation and emergency medical care for pediatric patients with the following conditions (slides 109-130):
   a. Seizures, including status epilepticus
   b. Altered mental status
   c. Drowning
   d. Fever
   e. Meningitis
   f. Gastrointestinal disorders
   g. Poisoning
   h. Apparent life-threatening emergencies (ALTE)
   i. Sudden infant death syndrome (SIDS)

Objectives

13. Describe special considerations in the scene sizeup, emergency medical care, and assisting family members in case of suspected SIDS and the importance of the presence of parents during pediatric resuscitation (slide 129).
16. Demonstrate proper spinal immobilization of a pediatric patient (slides 135-136, 139-140).

Objectives

17. Explain the importance of injury prevention programs to reduce pediatric injuries and deaths (slides 141-142).
18. Discuss the purpose of the federal Emergency Medical Services for Children (EMSC) program and the concept of family-centered care (slides 148-151).
19. Discuss factors that can increase EMS providers’ stress on pediatric calls and ways of managing the stress that may be associated with a pediatric call (slides 152-153).
Respond to 24313 South Avenue for an 11-month-old infant with an unknown medical emergency.

Time out 1651

Upon Arrival

• Man frantically waves at you and points to the residence
• Mother bursts out of the front door carrying an infant in her arms
• She thrusts the infant into your arms
• Infant is blue, limp, and not breathing

How would you proceed to assess and care for this patient?
Dealing with Care Givers

• Be competent, calm, and confident
• Keep care givers informed
• Ask care givers what is normal for the child
• Enlist care givers’ help when applicable

Dealing with the Child

Back to Topics
Developmental Characteristics

**Neonates**
(Newborn to One Month of Age)

- Newborn to one month
- Birth defects and unintentional injuries are causes of emergencies

Developmental Characteristics

**Infants**
(One Month to One Year of Age)
Infants
• One month to one year
• Under six months will usually allow examination
• Over six months will have “stranger anxiety”
• Complete scene survey as approaching
• Start with the feet if not critical

Developmental Characteristics

Toddlers
(One to Three Years of Age)

Toddlers
• One year to three years
• More challenging to assess
• “Do not like…” list
• Remain calm; try distraction
Communicating with Toddlers

Click here to view a video on the topic of communicating with toddlers.

Return to Directory

Developmental Characteristics

Preschoolers
(Three to Six Years of Age)

- Three years to six years
- Concrete thinking; interpret things literally
- Vivid imaginations
- Cover bleeding injuries as soon as possible
- Explain the obvious
Developmental Characteristics

School Age
(Six to Twelve Years of Age)

- Six years to twelve years
- Able to rationalize
- Injury may cause regression emotionally
- Treat them with respect; make them partners
- Modesty and body image important

Developmental Characteristics

Adolescents
(12 to 18 Years of Age)
Adolescents

- 12 years to 18 years
- Often believe they are invincible
- Preoccupied with their bodies and modesty
- Concerned about scars

Developmental Milestones

Click here to view a video on the topic of developmental milestones.

Return to Directory

Anatomical and Physiologic Differences

Back to Objectives
Airway Differences

- Proportionally larger than adults’
- Infants younger than six to seven months cannot support own head
- Fontanelles in infants

Head

Chest and Lungs

- Ribs more pliable and horizontal
- Lung tissue more fragile
- Normal for abdomen to move with inhalation
- Chest muscles used as accessory muscles
Respiratory System

- Breathing is inadequate at 60 breaths per minute or greater in children
- Infants and children less than five years old breathe at a rate two to three times faster than adults

Cardiovascular System

- Bradycardia is a late sign of hypoxia for infants and children
- For newborns, bradycardia is the initial response to hypoxia
- Hypotension will not develop until greater than 30 percent of blood volume is lost

Abdomen

- Abdominal musculature less well developed than adult's
- Liver and spleen more exposed and less protected
**Extremities**

- Will fracture more often by bending and splintering
- Infant and child motor development occurs from head to toes

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**Metabolic Rate**

- Infants and children have a much faster metabolic rate, even at rest
- Pediatric patients are at significant risk for acute hypoglycemia

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**Skin and Body Surface Area**

- Child’s skin surface is large compared to his body mass
- Skin is thinner and much more delicate than in adults
Assessment-Based Approach to Pediatric Emergencies

Scene Size-Up

• Standard Precautions
• Medical or trauma
• Scene safety
Primary Assessment

Pediatric Assessment Triangle (PAT)

- Appearance
- Breathing
- Circulation

Pediatric Assessment Triangle (PAT)

Primary Assessment

Assessing the Level of Consciousness (AVPU)
Assessing Level of Consciousness

Primary Assessment

Airway Assessment

• Number one cause of death is hypoxia
• Remember anatomical and physiologic differences
Breathing Assessment

• Count respirations for 30 to 60 seconds
• Consider any cessation of breathing longer than 10 seconds abnormal
• Rapid breathing
• Noisy breathing
• Diminished breathing

Primary Assessment

Circulatory Assessment
Circulatory Assessment

- Pulse rate and strength
- Capillary refill
- Peripheral versus central pulses
- Warmth and color
- Urinary output
- Mental status

Primary Assessment

Priority Determination

Make a transport decision based on scene size-up and primary assessment.
Secondary Assessment

- Medical emergencies
  - Gather history first

- Trauma emergencies
  - Perform physical exam and vitals first

Special Considerations for the Physical Exam

- Pediatric Glasgow Coma Score
- Assessing Lung Sounds
- Pulse Oximetry
Special Considerations for the Physical Exam

Other Physical Exam Considerations

- Hoarseness can indicate partial upper airway obstruction
- Nasal flaring is sign of respiratory distress
- Obtain respiratory rate prior to touching child
- Normal systolic = 80+(2 x age in years)
Special Considerations for Assessing the Vital Signs

- Respirations
- Pulse
- Skin
- Pupils
- Blood pressure

Special Considerations for Taking a History
• Get down to eye level of child
• Avoid rapid-fire questions
• Perform the secondary assessment from feet to head
• Do not explain things too far in advance

Reassessment

• Monitor for changes in
  – Mental status
  – ABCs
  – Vital signs
• Repeat reassessment every three to five minutes
Airway and Respiratory Problems in Pediatric Patients

Failure to properly assess, establish, and maintain the airway, ventilatory, or oxygenation status will defeat any other or subsequent treatment, without exception!

Early Respiratory Distress
Decompensated Respiratory Failure

- Flared nostrils
- Neck muscle retractions
- Suprasternal retractions
- Intercostal retractions
- "Horned" respiration
- Stridor
- Grunting
- Audible wheezing
- Subcostal retractions
- Altered mental status
- Flared nostrils
- Pale or bluish lips or mouth
- Stridor, grunting
- Breathing rate greater than 60
- Retraction of muscles
- Wheezing, working hard to breathe, or straining to breathe
- Decreased muscle tone
- Poor peripheral perfusion
- Use of abdominal muscles
Respiratory Arrest

- Signs and symptoms
- Be alert for cardiac arrest

Respiratory Distress in Children

Click here to view a video on the topic of respiratory distress in children.

Return to Directory
Airway Obstruction

- Indications of
  - Partial obstruction
  - Complete obstruction
- Treat with foreign body airway obstruction protocol

Signs and Symptoms
Signs and symptoms of a respiratory emergency require your immediate intervention, whether or not you know the exact cause of the condition.

Emergency Medical Care—Respiratory Emergencies

- Establish and maintain a patent airway
- Suction fluid from airway
- Assist ventilation; use OPA or NPA
- Initiate positive pressure ventilation
- Maintain O₂ therapy
- Position patient
- Transport
Emergency Medical Care—Foreign Body Airway Obstruction

Infant or Child with a Mild FBAO

- Do not perform any intervention unless patient can no longer make any sounds or cough
- Provide blow-by oxygen

Infant with a Severe FBAO

- Perform back blows and chest thrust as needed
- Consider ALS backup
Unresponsive Infant with FBAO

• Open airway; look for foreign body
• Provide two ventilations
• Provide 30 chest compressions; look for obstruction
• Continue ventilations then compressions until object is removed

Child with a Severe FBAO

• Assure the patient that you are there to help
• Perform abdominal thrusts as directed

Unresponsive Child with FBAO

• Open airway; look for foreign body
• Provide two ventilations
• Provide 30 chest compressions; look for obstruction
• Continue ventilations then compressions until object is removed
Croup

- Causes
- Ages affected
- Signs and symptoms
- Emergency medical care

Pharynx

Swollen larynx

Esophagus
Asthma

- Definition
- Signs and symptoms
- Emergency medical care

Bronchiolitis
Congenital Heart Disease (CHD)

- Definition
- Emergency medical care

Shock

- Apathy or lack of vitality
- Rapid respiratory rate
- Rapid or weak and thready pulse
- Altered mental status
- Pale, cool, clammy skin
- Absence of tears when crying
- Falling blood pressure
- Delayed capillary refill
• Definition
• Cause
• Emergency medical care

Cardiac Arrest

• Start compressions when heart rate is less than 60 bpm
• Signs
• Emergency medical care
Other Pediatric Medical Conditions and Emergencies

Seizures

- Definition
- Signs and symptoms
- Emergency medical care
Altered Mental Status

- Causes
- Assessment considerations
- Emergency medical care

Drowning
Poisoning

- Assessment considerations
  - Emergency medical care
    - Alert patient
    - Unresponsive patient
Apparent Life-Threatening Events (ALTE)

- Definition
- Assessment considerations
- Emergency medical care

Sudden Infant Death Syndrome

Assessment Considerations
Emergency Medical Care
Sudden Infant Death Syndrome

Aiding Families in SIDS Emergencies
Presence of Parents During Pediatric Emergencies
SIDS

Click here to view a video with information about SIDS.

Return to Directory

Pediatric Trauma

Back to Topics

Back to Objectives

• Blunt injury most common
• Mechanisms of injury
• Common injury patterns
Assessment Considerations

- Head
- Chest
- Abdomen
- Extremities
- Burns

Emergency Medical Care—Pediatric Trauma
• Maintain in-line spine stabilization
• Suction as necessary
• Provide O₂
• Provide complete spine immobilization
• Transport

Infant and Child Car Seats in Trauma

• Manual in-line spine stabilization
• Apply cervical collar
• Lay down car seat on backboard
• As a team, slide patient from car seat to backboard
• Pad the voids
• Secure to long board
• Secure head

Removing Child from a Car Seat
Four-Point Immobilization of an Infant or Child

Be aware most straps attached to stretchers are designed for adults, not children.

Injury Prevention
• Difference between "accident" and "injury"
• Types of injury prevention strategies

Child Abuse and Neglect

• Abuse
• Physical abuse
• Neglect
• Indicators

Back to Topics
Child Abuse And Neglect

Emergency Medical Care Guidelines for Child Abuse

- Gaining entry
- Dealing with the child
- Examining the child
- Dealing with the care givers
- Transporting the child
- Providing documentation

Special Care Considerations
Emergency Medical Services for Children (EMSC)

Designed to ensure that all children and adolescents have access to and receive appropriate care in a health emergency.

Family-Centered Care
Family-centered, community-based, coordinated care for children with special health care needs and their families

Taking Care of Yourself

• Sources of anxiety
• Alleviating stress
Follow-Up

Primary Assessment
• Cyanosis, flaccid muscles, and absence of response
• Partner puts mom in the passenger seat; dad drives separately
• Proceed to the back of the ambulance

Primary Assessment
• No spontaneous respirations
• No success with ventilation attempts
• Color worsens
**CASE STUDY**

Secondary Assessment

- Mother denies child being ill
- No evidence of obstruction upon inspection
- Deliver two breaths then 30 compressions
- Inspect the mouth before giving two ventilations

**CASE STUDY**

Secondary Assessment

- See a peanut; turn to the side and remove it
- Insert an OPA and begin ventilations
- RR: 20 assisted; P: 110 per minute; SpO\(_2\): 84 percent

**CASE STUDY**

Treatment and Reassessment

- Four minutes from the hospital, color turns from blue to normal pink
- Muscle tone returns; child is moving actively
- RR: 30 spontaneous
- O\(_2\) at 15 lpm via nonrebreather mask
CASE STUDY

Treatment and Reassessment

- Child begins crying
- Upon arrival transfer care to hospital
- Mother hugs you and partner, and father thanks you

Critical Thinking Scenario

- Two-year-old male, unknown medical, described as “really sick”
- Upon arrival, you’re met by the child’s frantic father
- His wife placed the child in the bathtub and left for a couple of minutes to answer the phone; when she returned, the toddler was submerged in the water

Critical Thinking Scenario

- As you enter the room, you note that the toddler is cyanotic and is limp
- You yell the child’s name and then squeeze the trapezius muscle but receive no response to either
- The patient is pulseless and apneic
1. What emergency care would you immediately provide for the toddler?

2. What special anatomical characteristics would you consider when establishing an airway and ventilating the toddler as compared to an adult?

Critical Thinking Questions

3. How would you perform CPR on this toddler?

4. Would you apply the AED? If so, what special considerations must you contemplate when using the AED on a two-year-old?

Reinforce and Review

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